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Application No.: 10/812,130

REMARKS/ARGUMENTS

Claims 1-16 are pending. None of the claims have been amended in this Reply.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rinaldi (U.S. Patent No. 4,352,149) in view of Gookin (U.S. Patent No. 2,856,593). According to the Action, Rinaldi discloses all of the elements of independent claims 9 and 15 except that a taper recess is formed on the barrel pin above the printed circuit board. Gookin teaches a taper recess (30) formed on a barrel pin and above a board (W), which is shown in Fig. 6, and it would have been obvious to one of ordinary skill in the art, at the time the present invention was made, to provide a taper recess into Rinaldi's barrel pin to firmly secure the wire conductor. The Action found that the method claims 1-8 were inherent.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. MPEP § 2143.03. Rinaldi and Gookin do not alone, or in combination, teach or suggest every element of independent claims 1, 9 and 15 of the present invention. They do not teach at least one barrel pin "directly riveted and soldered" to a printed circuit board "for an electrical connection between said printed circuit board and said barrel pin"; and "at least a wiring fastened in said barrel pin by a taper recess formed on said barrel pin

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and above said printed circuit board for an electrical connection between said barrel pin and said wiring” as claimed in claims 9 and 15. Nor do Rinaldi and Gookin teach “riveting one end of said barrel pin to said printed circuit board” and “fixing said wiring inside said barrel pin by a taper recess formed on said barrel pin and above said printed circuit board” as claimed in claim 1, which is essentially, the corresponding method claim of Claims 9 and 15.

Neither Rinaldi nor Gookin Teach or Suggest At Least One Barrel Pin “Directly Riveted” To a Printed Circuit Board

Rinaldi does not teach at least one barrel pin “directly riveted” to a printed circuit board. Rinaldi teaches a “wire mesh” “eyelet” (the so-called “barrel pin”) with a barrel or body 1 and two flanges 2 “fused or soldered to circuit elements”. See e.g., Rinaldi, col. 2, lines 5-10 and lines 46-50 (“A still further advantage of the inventions is that it provides . . . a solder connection between [the circuit elements and wire]”). And, it would not be obvious to one of skill in the art to rivet the eyelet of Rinaldi to a circuit board. The wire mesh is flexible so that it “withstand[s] distortion from any source” that results from soldering. One of ordinary skill in the art would certainly know that the flexible nature and mesh configuration of the eyelet makes it unsuitable for riveting to a circuit board. Also, the flanges 2, which are flat (as shown in Figs. 1-3) or a funneled-shaped flange 2 (as shown in Fig. 4) improve solderability (see e.g. Rinaldi, col. 3, lines 6-70) and allow the flanges to

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“rest” on the circuit element. In other words, the flanges 2 are not riveted to the circuit board and, like the eyelet, they are not suitable for riveting. The flanges or the eyelet are not and cannot be directly riveted to the circuit board as claimed in claims 1, 9 and 15.

Further, Gookin does not disclose at least one barrel pin “directly riveted” to a printed circuit board. See e.g., Gookin, col. 4, lines 5-10 (“The slit barrel portion 14, moreover, may provide a more readily solderable joint”).

Because neither Rinaldi nor Gookin teach or suggest at least one barrel pin “directly riveted” to a printed circuit board these patents in combination cannot render claims 1, 9 and 15 obvious. Therefore, claims 1, 9 and 15 are allowable as are claims 2-8, 10-14 and 16, which depend from claims 1, 9 and 15.

Neither Rinaldi Nor Gookin Teach or Suggest “At Least A Wiring Fastened In Said Barrel Pin By A Taper Recess Formed On Said Barrel Pin And Above Said Printed Circuit Board”

Aside from the fact that neither Rinaldi nor Gookin teach or suggest at least one barrel pin “directly riveted” to a printed circuit board, neither teaches “at least a wiring fastened in said barrel pin by a taper recess formed on said barrel pin and above said printed circuit board for an electrical connection between said barrel pin and said wiring.” In fact, Gookin teaches the opposite; that the taper recess formed on the barrel pin is below the printed circuit board. The so-called taper recess 30 of Gookin is a portion of the barrel portion 16 that is crimped against the bare

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terminal T of the conductor (such as a lead wire). The taper is meant to enhance the holding power prior to soldering.

One with an ordinary skill in the art would know that the taper recess 30, the bare terminal T and a bottom surface of the work piece W would be soldered through a soldering device (such as an air reflow oven as described on Paragraph [0024], line 11 of the specification of the present invention), that these elements are all located on one side of the work piece W and that the insulated portion I of the conductor is located on the other side; the top surface of the work piece W, as described in column 3, lines 14-21 and shown in Fig. 6 of Gookin. Accordingly, it is clear that the taper recess is formed on the barrel pin below, not above the printed circuit board. In the present invention, the barrel pin 201 has one end directly riveted and soldered at the printed circuit board 200, which is located on a bottom surface of the printed circuit board 200, and the taper recess 204 is formed on the barrel pin and above a top surface of the printed circuit board 200. In other words, in Gookin the "taper recess" 30 and the terminal portion T, and the insulated end portion I are located on opposite sides of the work piece W. Conversely, as claimed in claims 1, 9 and 15 and shown in Fig. 2(b) of the present specification, the "insulated end portion" is located on the same side of "work piece" (i.e., the printed circuit board 200) as the taper recess 204. Therefore, the teachings of Gookin, that the taper recess is formed on the barrel pin and below the printed circuit board, are

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different from those of the present invention, in which the taper recess is formed on the barrel pin and above the printed circuit board.

Because neither Rinaldi nor Gookin teach or suggest at least a wiring fastened in said barrel pin by a taper recess formed on said barrel pin and above said printed circuit board, these patents in combination cannot render claims 1, 9 and 15 obvious. Therefore, claims 1, 9 and 15 are allowable as are claims 2-8, 10-14 and 16, which depend from claims 1, 9 and 15.

The Present Invention Presents Many Advantages over Rinaldi and Gookin

The advantages of having the wiring fastened in the barrel pin by a taper recess formed on the barrel pin and above the printed circuit board, as disclosed in claims 1, 9 and 15 of the present invention, are that the taper recess (204) inwardly formed on the barrel pin by a taper tool can urge against the wiring (203) inside the barrel pin (201) so that the wiring (201) can have a relatively better performance for overcoming the pulling and twisting force and avoiding a rent solder on the printed circuit board as described on paragraph [0026] of the present specification. However, the relevant features of Rinaldi are that the lead wire is extending within the wire mesh cylinder and is electrically connected to the cylinder so that a flexible connection is achieved between the circuit elements on opposite sides of the circuit board and the lead wire and could not have the aforementioned advantages since these relevant features are focused on providing a connector with flexibility between

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the wire mesh cylinder and the lead wire instead. As for the connector having a lead wire soldered therein, as disclosed in claim 4 of Rinaldi, and the teachings of Gookin regarding the conductor which includes the so-called taper recess 30 located at the same side of the work piece W as that of the bare terminal T of the conductor as shown in Fig. 6 and described in column 3, lines 14-21 of the '593 Patent, Rinaldi and Gookin have the disadvantages described in paragraphs [0003] and [0004] of the present specification.

Based on the foregoing, Rinaldi and Gookin in combination cannot render claims 1 (which is the corresponding method claim of Claims 9 and 15), 9 and 15 obvious because they do not teach or suggest every element of these claims. And, claims 1, 9 and 15 present many advantages over Rinaldi and Gookin. Therefore, claims 1, 9 and 15 are allowable. Claims 2-8, 10-14 and 16 are dependent upon claims 1, 9 and 15, respectively, and thus, these dependent claims are also allowable. Withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1-16 is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this


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application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the present application, including claims 1 - 16, is in condition for allowance and a notice to that effect is respectfully requested. Prompt consideration is respectfully requested in light of the filing of this Reply within the two (2) month expedited period and the deadline to file an appeal, which is rapidly approaching.

Respectfully submitted,

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